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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/531,370	07/07/2005	Hans-Detlef Groeger	P05,0091	6471
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SCHIFF HARDIN, LLP			PHAM, HAI CHI	
PATENT DEPARTMENT			ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/531,370	GROEGER, HANS-DETLEF	
	Examiner Hai C. Pham	Art Unit 2861	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on _____.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 16-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 16-31 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 14 April 2005 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)
 Paper No(s)/Mail Date 04/14/05.
- 4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date. _____.
- 5) Notice of Informal Patent Application
- 6) Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 16-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Omae et al. (US 7,126,622) in view of Katakura et al. (US 5,892,532).

Omae et al. discloses a LED printer comprising a character generator (optical print head having a light-emitting portion 1) (Fig. 1) that has a plurality of light sources arranged in at least one row in groups (the light emitting elements are arranged in one row in 26 separate groups) (Fig. 2), a separate functional unit (driving ICs a1 through a26 dedicated to each of the 26 groups of light emitting elements) for each light source group for controlling of the light sources, the functional unit is connected with a central control unit (control circuit 6 of the printer) (Fig. 2), the functional unit comprising a control unit (timing control circuit 14) (Fig. 3), the light sources of each group being controlled by said control unit assigned to the respective functional unit (each of the

driving ICs a1-a26 has its own timing control circuit 14 for controlling the lighting timing of the light emitting elements in the group), the at least one light source row is imaged as an exposure line onto the recording medium, which is displaced substantially transverse to the exposure line relative to the character generator (Figs. 7A-7E), and a temporal beginning of the illumination phases of groups of light sources is selectable such that deviations of the exposure line from a target line are minimized (the lighting timing is selectively controlled not only for each individual light emitting element but also for different groups of the light emitting sections belonging to different driving ICs so as to correct for the deviation of the print line with respect to the reference line position) (col. 2, line 62 to col. 3, line 13) (col. 27, line 34 to col. 28, line 3) (see also Figs. 7A-7E).

Although Omae et al. suggests using a memory within the individual driving ICs to be accessed on the basis of addresses (col. 28, lines 4-8), Omae however does not explicitly teach the address decoder and the address via which it can be specifically activated.

Katakura et al. discloses a LED printer comprising optical print head (35) including a plurality of light emitting elements arranged in a row in plural groups, each group having a separate functional unit or IC chips DRs, each IC chip includes an address decoder or memory writing control section (77) controlling the memory write by selecting the data write memory cells for activating each of the corresponding light emitting elements (Fig. 23).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide the device of Omae et al. with the memory

writing control section integrated into the driving IC as taught by Katakura et al. The motivation for doing so would have been to provide a more compact driving circuit to reduce the otherwise large external memory writing control.

Omae et al. also fails to teach the intermediate carrier to carry the image exposed by the light source.

However, it is well known in the art that image can be formed on an intermediate carrier such as the photosensitive drum to be transferred onto the paper or directly to a photosensitive recording medium supported on the drum. Katakura et al. discloses a LED printer comprising an intermediate carrier or photosensitive drum (not shown) and a transferring section for transferring the toner image formed on the photosensitive drum onto paper (col. 3, line 45-54).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide the device of Omae et al. with the photosensitive drum and the image transferring section as taught by Katakura et al. since Katakura et al. teaches this to be well known in the art to formed a latent image on the photosensitive drum to be transferred onto paper.

The method claims 16 and 31 are deemed to be clearly anticipated by functions of the above structures.

With regard to claim 22, 24 and 30, Omae et al. fails to teach data being stored in a volatile memory separately assigned to the functional unit, and the data comprising a correction parameter for each light source of the group that represents its individual illumination intensity.

Katakura et al. teaches volatile memories 78a-78d being provided in each functional unit or driver DR for storing the current values for adjusting the drive current of the respective light-emitting elements of the group so as to reduce the variation in light emitting intensity between each light emitting elements of the group and to prevent change in dot shape (col. 11, lines 3-25).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide the device of Omae et al. with the volatile memories assigned to each functional unit for storing the correction parameter for each light source of the group as taught by Katakura et al. The motivation for doing so would have been to reduce the variation in light emitting intensity between each light emitting elements of the group and to prevent change in dot shape as suggested by Katakura et al.

Omae et al. further teaches:

- (regarding claims 17 and 26) the light source groups are each controllable by the control unit of the associated functional unit independently of a clock pulse that is predetermined by a line period provided for processing of a print line (the timing control circuit 14 controls the corresponding light source group independent of a clock pulse governing the printing timing of the line image by controlling the lighting timing of the individual light emitting sections via the delay control circuit 18),

- (regarding claims 18 and 27) the control unit (14) of each functional unit (driving IC) is controlled by the central control unit (6) in order to initiate the illumination phase of the associated light source group (Fig. 2),
- (regarding claims 19 and 28) the central control unit (6) is programmed in such a way that it gives the control unit of each functional unit an individual start command for controlling the associated light source group, a time of the start command being selected such that a deviation of the exposure line segment corresponding to the light source group from the target line is minimized (the timing control circuit 14 of each of the driving IC receives a timing signal EN from the control circuit 6 to start the lighting timing of the light emitting elements of the group),
- (regarding claims 20 and 29) the functional units (driving ICs) are arranged operatively in a row (Fig. 2), the functional units having an input interface for receiving one of the elements selected from the group consisting of data (e.g., input data signals SI as received by the shift register 11 from a previous stage) and a clock signal (e.g., input clock signal CI), and the functional units, with the exception of a last functional unit in the row, having an output interface for forwarding the data (SO) or the clock signal (CO) to the following functional unit in the row (Figs. 2 through 4),
- (regarding claim 21) between the reception and the forwarding of the data or of the clock signal there is situated a system clock in which the clock signal is reproduced (the system clock CLOCK fed by the control circuit 6 of the printer to

the first driving IC a1 via the input terminal CI is buffered via the buffer B1 before being fed to the next driving IC) (col. 8, lines 10-20) (Fig. 4),

- (regarding claim 23) the data comprise print data for the segments, corresponding to the light source group, of a plurality of lines to be printed (five data signals corresponding to five lines of image are stored at one time in the latch circuits 12a-12e as being fed from the shift register 11) (col. 15, lines 49-65) (Fig. 4).

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai C. Pham whose telephone number is (571) 272-2260. The examiner can normally be reached on M-F 8:30AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Luu can be reached on (571) 272-7663. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Hai Pham

HAI PHAM
PRIMARY EXAMINER

June 24, 2007